

SOME CALIFORNIAN PARASITIC BEES

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Triepeolus timberlakei Cockerell, n. sp.

Female (type). Length about 11 mm.; black, with pubescent markings very pale ochreous, white on face, under side of thorax, coxæ, under side of abdomen and a large triangular patch at each side of pygidial area; mandibles except apex, labrum and more than apical half of clypeus red; scape dusky red, blackened above, third antennal joint red and black, flagellum reddish beneath, with a spotted effect; tubercles black, densely covered with hair; tegulæ red; nervures and stigma black, wings dilute brownish beyond the nervures; legs bright red; middle and hind spurs black; false pygidium and its immediate vicinity red; eyes pale gray, slightly reddish in lower part, lower part of front and upper part of face densely covered with white hair; clypeus very minutely and densely punctured, the larger, scattered punctures so feebly impressed as to be hardly visible; third antennal joint shorter than fourth, fourth a little longer than fifth; mesothorax and scutellum very densely rugoso-punctate, not shining; mesothorax with an ochreous marginal band at sides and posteriorly, but none whatever anteriorly; disk with a pair of broad parallel stripes, pointed at each end, not reaching anterior margin; scutellum conspicuously bilobed, its posterior half densely covered with hair; metathorax densely hairy with a very small basal bare triangular area, its margins shining, and a dark central pit; pleura covered all over with hair, but thinner on lower part; second cubital cell very large, triangular (narrow above), receiving recurrent nervure at middle; first tergite covered with hair, except a large transverse band, rather narrowly rounded at ends, the apical hair band notched in middle; second tergite with the antero-lateral extensions of hair-band oblique, spear-head shaped, forming a very acute angle with the band; bands on third and fourth segments conspicuously undulate at sides; venter with first three segments largely covered with white hair; fourth bare and black, with the apical margin reddened; fifth with two red spots at middle of base, and apex red; fifth sternite turned downward at end.

Female variety *heterodoxus* n. var. Labrum, clypeus and scape black; third antennal joint red beneath, but the other flagellar joints black with apical margin brownish; stripes on mesothorax reaching anterior margin; lower part of pleura partly exposed, very densely rugoso-punctate; transverse band on first tergite broader; false pygidium blackish; apical margin of fourth sternite white with finer pubescence; fifth with a red band across the middle, and base and apex dark. Certainly only a variety, but distinct in several particulars.

Male. Length about 9.5 mm.; face densely covered with pure white hair; clypeus and labrum black, mandibles with base or middle

red; antennæ black, the flagellum obscurely reddened beneath; stripes on mesothorax rather short, reaching margin, and area on each side of them thinly hairy; pleura densely hairy all over; apical plate of abdomen narrow, variably reddish; outstanding subapical fringe of venter largely pallid.

Riverside, California, May 29 to June 28 (Timberlake). The type female was at flowers of *Gutierrezia sarothræ*, as also were the males. The var. *heterodoxus* was at *Chrysanthemum segetum*, June 28. The type was taken May 29, and the males June 4 and 12. In the California fauna this is nearest to *T. callopus* Ckll., but actually its closest affinity is with *T. cyclurus* Ckll. from Colorado. It might be considered a race of *cyclurus*, but the scape is distinctly longer than in that species, and the pygidial area is not so round nor has it a margin of pale tomentum. The type female differs also from the type of *cyclurus* by the red apical part of clypeus, reddish scape, and non-interrupted apical band of first tergite. Mr. Timberlake states that this is the commonest Epeoline at Riverside.

TRIEPEOLUS LESTES Cockerell

Riverside, California. Females at *Gutierrezia sarothræ*, September 14 and 28 and at *Helianthus annuus* June 14; males at *G. sarothræ*, September 6 and 9 (Timberlake). *T. lestes* was based on a female from Glenwood Springs, Colorado. The present females vary in length from about 9 to 11 mm., and only differ from the description in having the scutellum quite strongly bilobed. I think there is no substantial difference. The species is also related to *T. wyomingensis* Ckll., *T. rectangularis* Ckll. and *T. eldredi* Ckll., but sufficiently distinct from all these.

The male, not before known, is similar in size and appearance to the female, but the mesothorax is beset with thin ochreous hair, leaving an anchor-shaped black area. Thus the male runs to *T. amandus* Ckll. in the table in Amer. Mus. Novitates, No. 23. It is easily separated from *T. amandus* by the band on sixth abdominal segment not clear white; much darker tegulæ; hair on inner side of hind tarsi bright ferruginous; apical plate black, rounded at end. These differences, however, are not very radical, and it is possible that *T. amandus* is the true male of *T. lestes* (in which case the name has priority of place) and that the California *T. lestes* represents a separate subspecies.

In the present state of our knowledge, this can only be suggested as a possibility.

Epeolus sarothrinus Cockerell, n. sp.

Female (type). Length 9-10 mm.; black, with the pubescent markings dorsally very pale ochreous; ventrally, on face and sides of fifth abdominal tergite, white; mandibles with the base broadly red; labrum black with an obscure red spot at each side; clypeus entirely black, glistening, very densely and minutely punctured, with scattered large shallow punctures; sides of face densely covered with white hair; first three antennal joints rich chestnut red, the basal two-thirds of flagellum red beneath; fourth joint hardly longer than third on upper side; no red on thorax; mesothorax with a band of pale pubescence along posterior and lateral margins, not reaching anterior margin; discal stripes sharply defined, narrowly fusiform diverging anteriorly, not reaching anterior margin; scutellum bilobed; area of metathorax large, bare and dull; lower part of mesopleura with a bare patch; the pleura crossed by a very broad white band, above which, below the tegulæ, the pubescence is dull pale gray; tegulæ bright ferruginous; nervures black; part of wings beyond the cells strongly brownish; second cubital cell narrow, triangular, narrowed almost to a point above, receiving recurrent nervure beyond middle; legs clear red, the middle and hind tibiæ with an obscure dusky spot on outer side; middle and hind spurs black; hair on inner side of hind basitarsi orange; black area on first abdominal tergite a transverse band, but very broad, with the lateral margins oblique; basal hair-band of first tergite deeply notched, but not broken, apical band rather broadly (varying to narrowly) interrupted; hair-band on second tergite narrowly interrupted, on third and fourth entire; lateral hair patches of second tergite strongly oblique, pointed, making an acute angle with the band; fifth tergite with the minutely punctured surface exposed in middle, but at sides densely covered with white hair; false pygidium short, but poorly defined; venter with broad white hair-bands.

Male. Similar to the female, but a little smaller, face covered with snow-white hair; scape black, third joint red beneath, but flagellum almost without red; pattern of thorax as in male, but discal stripes narrower; basal hair-band of first tergite broadly interrupted, but pattern of abdomen essentially as in female; band on sixth segment white; apical plate large and dark.

Another male, assumed to be only a variant, has the discal marks of mesothorax broad, sharply pointed posteriorly, and broadly connected laterally with lateral bands, leaving an anchor-shaped black area with a very thick stem, which broadens on anterior margin. It also differs in having the anterior and hind femora with blackish suffusion and the apical hair-bands on first and second tergites quite entire. Also, the apical plate is less obtuse. It will be useful to

have a name for this marked variation and I will call it variety *confluens*.

Riverside, California, at flowers of *Gutierrezia sarothræ*, May 26 to July 6 (Timberlake). The type female and the male *confluens* were taken on the same day, May 26. Mr. Timberlake says this is the commonest *Epeolus* at Riverside, and he has taken nearly sixty specimens during the last four summers. The female is extremely close to *E. lectiformis* Ckll. from Colorado, but is more robust, with much thicker scape, and the marking of mesothorax different. The apex of the abdomen is black, while in *lectiformis* it is red. There is also evident affinity with *E. permixtus* Ckll. from the Gulf of California, which shows the same sexual difference in the color of the antennæ. I have before me a male co-type of *E. permixtus* and it differs from *E. sarothrinus* by being distinctly larger and more robust, the eyes much larger and very much darker, the antennæ stouter and the apical plate broader. Thus, although the aspect is conspicuously different, it may later seem expedient to treat the present insect as a northern race of *E. permixtus*.

EPEOLUS COMPACTUS Cresson

Black Canyon, Mohave Desert, California at flowers of *Ericameria paniculata*, October 7, 1928 (Timberlake). One of each sex sent. It agrees excellently with *E. compactus* from Fedor, Texas.

NEOLARRA PRUINOSA Ashmead

Mr. Timberlake writes: "Taken at Whitewater, on *Eriogonum*. My Riverside specimens are slightly larger and have a tendency for the second submarginal cell to be open by having the second intercubitus incomplete or sometimes entirely lacking. I believe, however, that the specimens are all one species. You will notice that the females are reddish on the abdomen and that the males are dark. This is surely only a sexual character. In my last letter I suggested that this species might be *N. pruinosa* Ashmead. I think that *Neolarra* is parasitic on species of *Perdita*."

The female agrees very well with *N. pruinosa* from Glorieta, N. M., and I can thus confirm Mr. Timberlake's suggestion. The males, with dark abdomen, would fall, according to my key, with *N. vittata* Ckll. and *N. alba* Ckll., but they are distinct

from *N. alba* by the much more slender form and smaller head. From *N. vittata* they are separated by being smaller and less robust, but allowing for a moderate amount of variation, it is conceivable that *N. vittata* should be sunk as the male of *N. pruinosa*. My present bias is in favor of such a conclusion. The variation in venation, mentioned by Mr. Timberlake tends to break down the distinction between *Neolarra* and *Philere-mulus*.

Oreopasites euphorbiæ Cockerell, n. sp.

Male (type). Length about 4 mm., not very robust; head and thorax black, with appressed pure white tomentum, dense on face, thorax anteriorly, posterior margin of mesothorax and most of pleura; mandibles and labrum red; flagellum thick, red beneath; disk of mesothorax shining; tegulæ rufous; wings clear, nervures and stigma fuscous; legs ferruginous; hind tibiæ and tarsi covered with silver-white hair on outer side; abdomen moderately shining, clear ferruginous, with a little pale hair at sides of first segment and portions of broad pure white hair-bands on the others, namely, a large patch on each side of second, nearly the lateral third of band on third, a rather narrowly interrupted band on fourth, and an entire band on fifth. The above can be seen with an ordinary lens; the following characters are microscopic: Mandibles simple; malar space obsolete; scape short and curved; middle flagellar joints much broader than long; mesothorax with scattered round punctures; basal nervure meeting nervulus; second cubital cell receiving first recurrent nervure about twice as far from base as second from apex; marginal cell considerably shorter than the cubitals combined, its apex briefly appendiculate; spurs finely and briefly pectinate; abdomen very minutely punctured, hind margin of segments broadly pale golden. The anterior femora are dark above, as in *O. vanduzeei*.

Male similar; apical plate of abdomen broadly rounded.

Riverside, California, September 9 and 12, 1927 (P. H. Timberlake). It occurred on flowers of *Euphorbia albomarginata* in company with *Spinoliella euphorbiæ* Ckll. on which it is doubtless parasitic. It is the smallest *Oreopasites*, nearest to *O. vanduzeei* Ckll., from which it is known by the small size and more sparsely punctured mesothorax. Mr. Timberlake had recognized it as new. So far, it appears that the different species of *Spinoliella* have different *Oreopasites* parasites, but in the case of *Neolarra pruinosa* the parasite appears to be more widely distributed than any single host species which it can be supposed to infest.